

## 1.2.0 ADMINISTRATIVE

### 1.2.3 INTERBASIN DIVERSION

Section 25-8-365 (*Interbasin Diversion*) of the Land Development Code states that development may divert stormwater from one watershed to another if the proposed diversion is less than 20 percent of the gross site area or less than 1 acre, whichever is smaller. The applicant must demonstrate the following:

- The existing drainage patterns are maintained to the extent feasible.

Minor diversions of drainage between watersheds are permitted to allow for design flexibility as buildings, parking lots, and other impervious cover are placed along a watershed divide. The diversion should be the minimum amount necessary to accommodate the placement of this development along the divide.

- There are no adverse environmental or drainage impacts.

The applicant must demonstrate no adverse drainage impacts in accordance with 25-7 (Drainage) and the Drainage Criteria Manual.

Regulations specific to a watershed classification (e.g., impervious cover limits, cut and fill requirements, construction on slopes requirements) shall apply to the watershed boundaries as they exist pre-development. Proposing to change the watershed boundary with a diversion of stormwater does not change the applicable environmental regulations, with the exception of water quality treatment. The development shall provide the level of water quality treatment required for the watershed that the stormwater drains to post-development.

If there are critical environmental features (CEFs) identified on the property and/or within 150 feet of the property boundaries, staff from the Watershed Protection Department must determine that the proposed diversions will not adversely impact those features. Interbasin hydrologic diversion can adversely impact wetland and geologic CEFs if the diversion either increases or decreases the quantity, quality, or rate of surface water runoff under which the vegetation, geology, and soils have developed.

The hydrophytic vegetation community and soils that characterize a wetland CEF have adapted over time to a specific range of hydrologic conditions. Reducing flows to wetlands can effectively collapse the wetland vegetation community and the environmental services which it provides. Similarly, increasing the rate of runoff of overland flow which supports a wetland can significantly degrade both the soils and the vegetation community.

The quality, quantity, and rate of overland flow also greatly impacts karst features. The soils, vegetation community, rock formations, and conduits that have developed under

the historic moisture regime may not be able to perform properly under altered hydrology. It is imperative to maintain natural patterns and high quality inflows to recharge features such as sinkholes and caves. Similarly, it is important to ensure no significant increases to the rate of runoff which may increase erosion or sediment loading. Bluffs, rimrocks, and springs may also be adversely affected by increases or decreases to runoff.

## 1.8.0 IMPERVIOUS COVER CALCULATION CRITERIA

### 1.8.1 Calculations

A. This section applies to the impervious cover requirements of Chapter 25-8, Subchapter A of the Land Development Code. The impervious cover requirements of Chapter 25-8, Subchapter A do not restrict impervious cover on a single-family or duplex lot but apply to the subdivision as a whole. This section does not apply to impervious cover calculations for the purposes of complying with Chapter 25-7 of the Land Development Code.

B. Impervious cover is defined as the total area of any surface that prevents the infiltration of water into the ground, such as roads, parking areas, concrete, and buildings. Impervious cover calculations shall include all roads, driveways, parking areas, buildings, concrete, and other impermeable construction covering the natural land surface. Buildings or structures raised above the ground (e.g., pier and beam foundation) shall be considered impervious cover. Unpaved roads, driveways, and parking areas compacted by vehicle use shall be considered impervious cover. Corrals compacted by horses or other livestock shall be considered impervious cover.

For an uncovered wood deck that has drainage spaces between the deck boards and that is located over a pervious surface, 50 percent of the horizontal area of the deck shall be counted as impervious. A covered deck shall be considered impervious. Also, the portion of for a site used for the storage of scrap and metal salvage, including auto salvage, the entire designated scrapyard storage area shall be considered impervious cover.

Areas used on an ongoing or permanent, operational basis for the storage of dirt, rocks, or gravel shall be considered impervious cover. Spoils piles on a permitted construction site are not considered impervious cover. Pallets utilized for the storage of pavers, plastic bags of fertilizer or soil, or construction materials shall be considered impervious cover. For empty pallets or pallets used for the storage of potted plants, 50 percent of the horizontal area of pallet storage shall be counted as impervious cover. Potted plants stored on the ground shall not be considered impervious cover.

C. Impervious cover calculations exclude:

- sidewalks in a public right-of-way or public easement;
- multi-use trails open to the public and located on public land or in a public easement;
- water quality controls, excluding subsurface water quality controls;
- detention basins, excluding subsurface detention basins;
- drainage swales and conveyances;
- ponds, pools, and fountains;
- and areas with gravel placed over pervious surfaces that are used only for landscaping or by pedestrians and are not constructed with compacted base;
- weed screens;
- solar screen tents
- porous pavement designed in accordance with Section 1.6.7 of this manual, limited to only pedestrian walkways and multi-use trails, and located outside the Edwards Aquifer Recharge Zone;
- fire lanes that consist of interlocking pavers, are designed in accordance with Section 1.6.7 of this manual, are restricted from routine vehicle access, and are approved by the Austin Fire Department; and

- a subsurface portion of a parking structure if the director of the Watershed Protection department determines that:
  - the subsurface portion of the structure is located within an urban or suburban watershed; is below the grade of the land that existed before construction of the structure; is covered by soil with a minimum depth of two feet and an average depth of not less than four feet; and has an area not greater than fifteen percent of the site;
  - the structure is not associated with a use regulated by Section 1.2.2 of Subchapter F of Chapter 25-2 (*Residential Design and Compatibility Standards*);
  - the applicant submits an assessment of the presence and depth of groundwater at the site sufficient to determine whether groundwater will need to be discharged or impounded; and
  - the applicant submits documentation that the discharge or impoundment of groundwater from the structure, if any, will be managed to avoid adverse effects on public health and safety, the environment, and adjacent property.

~~C. Permeable or interlocking pavers shall be considered impervious cover, except up to 20 percent of the area of the pavers may be excluded in calculating impervious cover if the pavers are approved by the Planning and Development Review Department in accordance with LDC Section 25-8-151 (Innovative Management Practices) for recharge enhancement purposes.~~

D. For calculation purposes, Section 25-8-64 (*Impervious Cover Assumptions*) of the Land Development Code states that impervious cover for single-family or duplex lots shall be assumed as follows:

<b>Lot Area</b>	<b>Impervious Cover</b>
Greater than three (3) acres	10,000 square feet
Greater than one (1) acre - three (3) acres	7,000 square feet
Greater than 15,000 square feet - one (1) acre	5,000 square feet
Greater than 10,000 square feet - 15,000 square feet	3,500 square feet
10,000 square feet or less	2,500 square feet

~~E. Impervious cover calculations shall include each roadway within a proposed development only up to a maximum pavement width of 40 feet. Requirements for detention, sedimentation or filtration of runoff from such roadways are not affected by this provision. An application for a commercial development must demonstrate that once fully constructed, the development will not exceed applicable maximum impervious cover limitations. For a commercial subdivision with an internal roadway, the platted lots will need to account for the roadway if the roadway exceeds the impervious cover limits within the right-of-way.~~

~~F. Development adjacent to roadways built as a City of Austin Capital Improvements Program project after the effective date of this ordinance shall include in its impervious cover calculations pavement width for the roadway up to a maximum of 44 feet and the associated right of way or ½ the pavement width and right of way for roadways external to but adjacent to the~~

~~development.~~ Impervious cover limitations do not apply to an application for a commercial site development, including a roadway project, which will not exceed 8,000 square feet of new impervious cover. Roadway improvements are limited to intersections upgrades, low-water crossing upgrades, additions for bicycle lanes, and additions for mass transit stops.

## **1.8.2 Construction on Slopes**

A. No roadways or driveways shall be constructed on slopes in excess of 15 percent except where necessary to provide primary access to ~~areas flatter slopes, constituting either~~ a minimum of two (2) contiguous acres with a gradient of 15 percent or less or building sites for at least five (5) residential units. Cuts and fills on roadways or driveways are to be restored as described herein.

B. No building or parking areas shall be constructed on slopes in excess of 15 percent, provided, however, that buildings and parking structures may be located on slopes of 15 to 25 percent when the following criteria are met:

1. Impervious cover on 15-25 percent slopes shall not exceed ten (10) percent of the total area of 15-25 percent slope.

2. Structures located upslope of slopes between 15-25 percent and not using terracing techniques shall be constructed utilizing pier and beam techniques. Fill shall be placed to blend with the natural contour. No vertical walls shall extend beyond the lowest finished floor elevation, other than necessary to screen mechanical appurtenances and shall be stepped, if appropriate. Terraced fill and walls shall be a maximum 1:1 running grade limited to four (4) feet in height for each terrace. This section shall not apply to single family and duplex construction.

3. Structures located downslope of slopes between 15-25 percent should be terraced and consolidated into the hillside. Structural excavation shall not exceed a maximum of eight (8) feet in depth, except by terracing. Areas of cut not hidden from view shall be effectively screened by additional landscaping.

4. Hillside vegetation shall not be disturbed other than that necessary to locate the structure. All disturbed areas shall be restored with native vegetation. Adapted vegetation may be allowed to accommodate unique site conditions if approved the Planning and Development Review Department.

5. If terraces are not provided, cuts and fills are to be restored to 3:1 slopes and revegetated.

6. In all cases, slopes generated by cut and fill shall be stable, giving full consideration to soil characteristics and erosion potential. Techniques to be used are to be specified with the final plat. Slope exceeding a 3:1 ratio, other than cuts which are determined to be stable, must be stabilized by permanent structural means (e.g., dry stack wall, terraces, exposed aggregate concrete walls, etc.) and approved by the ~~Director of the Watershed Protection and Development Review Department.~~

## 1.9.0 NEED FOR WATER QUALITY CONTROLS

~~Sections 25-8-211 and 13-2-502 (deleted) of the LDC establish the need for water quality controls for subdivisions and site plans. If the project is affected by state law (Texas Government Code 481-I, also known as Senate Bill 1704) it is subject to the rules in effect at the time determined to be the beginning of the project.~~

~~Development exempt pursuant to 13-2-502 (deleted) which has impervious cover of less than 20% of the Net Site Area shall follow the provisions of the previous applicable watershed ordinance. When impervious cover for commercial and multi-family projects meets or exceeds 20% of the Net Site Area the requirements of this section for structural controls shall apply. Development of less than 1000 SF for which a site plan exemption is granted in accordance with Section 25-5-2 of the Land Development Code, does not require water quality controls; however, cumulative impervious cover resulting from a project claiming this exemption on more than one occasion will require water quality controls according to the following criteria.~~

### 1.9.1 General Requirements

Section 25-8-211 of the Land Development Code establishes the need for water quality controls for subdivisions and site plans. Water quality controls are not required on a single-family or duplex lot but apply to the residential subdivision as a whole. In all watersheds, water quality controls are not required for a roadway project with less than 8,000 square feet of new impervious cover, as defined below. Roadway improvements are limited to intersection upgrades, low-water crossing upgrades, additions for bicycle lanes, and additions for mass transit stops.

In the Barton Springs Zone, water quality controls are required for all development except for the minor roadway improvements described above. In a watershed other than a Barton Springs Zone watershed, water quality controls are required for development if the total of new and redeveloped impervious cover exceeds 8,000 square feet. Water quality controls are also required for development located in the Water Quality Transition Zone and for the development of golf courses and playfields where fertilizers, pesticides or herbicides are applied.

Removal of impervious cover and replacement with vegetation does not require water quality controls. Removal and replacement of impervious cover necessary for the installation, repair or replacement of utilities does not require water quality controls.

~~Water quality controls required in this section must be sized for the drainage area to each control. See Section 1.6.2 of the Environmental Criteria Manual for additional information. Development is defined in LDC Section 25-1-21. Redevelopment is defined in the Glossary of the ECM. For the purposes of Section 1.9 of the ECM, **New Development** is all development proposed with an application and all development which has occurred with no water quality controls since the effective dates identified below. *(E.G. Sites previously with impervious cover less than 20% NSA, sites which added impervious cover since the effective date through the site plan exemption process, etc.)*~~

Development of less than 1,000 SF for which a site plan exemption is granted in accordance with Section 25-5-2 of the Land Development Code, does not require water quality controls, however, cumulative impervious cover resulting from a project claiming this exemption on more than one occasion will require water quality controls according to the criteria below.

~~Removal of impervious cover and replacement with vegetation does not require water quality controls. Removal and replacement of impervious cover necessary for the installation, repair or replacement of utilities does not require water quality controls.~~

~~According to 25-8-211 of the Land Development Code, water quality controls are required for the development of golf courses and playfields where fertilizers, pesticides or herbicides are applied. This is applicable within all watersheds and within the Uplands, Water Quality Transition Zone, or Critical Water Quality Zone.~~

## **1.9.2 Requirements For Water Quality Controls In The Uplands Zone**

Water quality control requirements vary with watershed regulatory category and development situation, as described below. In some instances, it may not be possible to collect all areas of a development to a water quality control. In those cases, it may be acceptable to treat an approved equivalent area. The approved equivalent area must be an area that does not currently receive treatment and is not likely to be treated in the future such as those areas that meet the definition of base impervious cover, public right-of-ways and/or single family subdivisions. An approved equivalent area is hereby defined as up to 1.5 times the proposed impervious cover area that requires water quality controls.

### **A. Criteria For Urban Watersheds**

An alternative to providing on-site water quality controls is provided for in LDC Section 25-8-214, Optional Payment in Lieu of Structural Water Quality Controls in Urban Watersheds. Additional information is provided in Appendix T of the Environmental Criteria Manual, "Request for Fee in Lieu of Water Quality Controls in the Urban Watersheds." In addition, under 25-8-215, a person who redevelops property in an Urban Watershed qualifies for Cost Recovery by the City if the following Criteria are met:

#### **1) Construction of structural controls**

- a. Redeveloped portion is greater than 1 acre; AND
- b. Structural control treats at least 10 acres of previously untreated off-site drainage, in addition to the ECM required volume required for redevelopment.

#### **2) Payment in lieu of structural controls**

- a. Project drains to an existing or proposed regional structural control funded by Urban Structural Control Fund. Pond must have capacity to treat proposed development at ECM levels.

Upon either of the aforementioned conditions being met, the City may reimburse the applicant according to Part D of Appendix T. If Cost Recovery is pursued in addition to City of Austin Cost Participation for a Regional Water Quality Pond via a Community Facilities Contract, the maximum COA reimbursement shall not exceed 100% of the cost of the pond.

**Base impervious cover** is that which both existed on the site on the effective date of the Urban Watershed Ordinance (September 10, 1991) and which currently exists at the time of application for a new or revised permit, or which is permitted or existing for which water quality controls have been provided. **New impervious cover** is the cumulative total of all impervious cover added or proposed to be added to a project since the effective date of the Urban Watershed Ordinance, and for which water quality controls have not been previously provided. **Redeveloped impervious cover** is the cumulative total of all impervious cover redeveloped or proposed to be redeveloped on a project since the effective date of the Urban Watershed Ordinance, and for which water quality controls have not been previously provided. Cumulative total of impervious cover shall include that impervious cover added to a site under one or more of the following: permits, site plans, exemptions, waivers, or unapproved development. This

shall apply to each site plan or development permit regardless of the number of lots within that plan or permit.

For all levels of impervious cover, projects in the Urban Watersheds must provide water quality controls when the cumulative total of both new and redeveloped impervious cover exceeds ~~5000~~ 8,000 square feet.

When required above, water quality controls shall be provided according to the following typical situations.

SITUATION	REQUIREMENT
Impervious cover is added to a site where no impervious cover exists	Provide controls for 100% of the area of development containing <b>new impervious cover</b> .
Impervious cover is added to a site with <b>base impervious cover</b>	Provide controls for 100% of the area of development containing <b>new impervious cover</b> , or approved equivalent area
Impervious cover is added to a site with <b>new impervious cover</b>	Provide controls for 100% of the area of development containing <b>new impervious cover</b>
<b>Redeveloped impervious cover</b>	Provide controls for 100% of the area of development containing <b>redeveloped impervious cover</b> , or an approved equivalent area

#### B. Criteria For Barton Springs Zone

##### 1. SOS ORDINANCE (920903D)

**Base impervious cover** is that which both existed on the site on May 18, 1986, and which currently exists at the time of application for a new or revised permit, or which is permitted or existing for which water quality controls have been provided. **New impervious cover** is the cumulative total of all impervious cover added or proposed to be added to a project since May 18, 1986, and for which water quality controls have not been previously provided. **Redeveloped impervious cover** is the cumulative total of all redeveloped impervious cover or proposed redeveloped impervious cover since May 18, 1986, and for which water quality controls have not been previously provided. Cumulative total of impervious cover shall include that impervious cover added to a site under one or more of the following: permits, site plans, exemptions, waivers, or unapproved development. This shall apply to each site plan or development permit regardless of the number of lots within that plan or permit.

According to Section 25-8-514 of the Land Development Code, all development requires that water quality controls and onsite pollution prevention techniques be provided which result in no increases in respective average annual loading of the specified pollutants, according to the following typical situations. (Refer to section 1.6.9 ECM for design information.)



Section 25-8-516 excludes the application of SOS to development limited to a total of 8,000 SF for existing tracts and platted lots existing as of November 1, 1991. Development excluded from these provisions should follow the requirements set forth under the following section 1.9.2C "Criteria for Watersheds other than Barton Springs Zone and Urban."

~~According to Section 25-8-514 of the Land Development Code, all development requires that water quality controls and onsite pollution prevention techniques be provided which result in no increases in respective average annual loading of the specified pollutants, according to the following typical situations. (Refer to section 1.6.9 ECM for design information.)~~

SITUATION	REQUIREMENT
Impervious cover is added to a site where no impervious cover exists	Provide controls for 100% of the area of development containing the <b>new impervious cover</b>
Impervious cover is added to a site with <b>base impervious cover</b>	Provide controls for 100% of the area of development containing <b>new impervious cover</b> or an approved equivalent area
Impervious cover is added to a site with <b>new impervious cover</b>	Provide controls for 100% of the area of development containing <b>new impervious cover</b>
<b>Redeveloped impervious cover</b>	Provide controls for 100% of the area of development containing the <b>redeveloped impervious cover</b> , or an approved equivalent area.

#### C. Criteria For Watersheds Other Than Barton Springs Zone And Urban

**Base impervious cover** is that which existed on the site on the effective date of the Comprehensive Watershed Ordinance which is May 18, 1986, and which currently exists at the time of application for a new or revised permit, or which is permitted or existing for which water quality controls have been previously provided. **New impervious cover** is the cumulative total of all impervious cover added or proposed to be added to a project since May 18, 1986, and for which water quality controls have not been provided. **Redeveloped impervious cover** is the cumulative total of all redeveloped or proposed redeveloped impervious cover since May 18, 1986, and for which water quality controls have not been previously provided. Cumulative total of impervious cover shall include that impervious cover added to a site under one or more of the following: permits, site plans, exemptions, waivers, or unapproved development. This shall apply to each site plan or development permit regardless of the number of lots within the plan or permit.

Projects in watersheds other than the Barton Springs Zone and the Urban watersheds, must provide water quality controls when ~~cumulative~~ impervious cover ~~exceeds 20% of the net site area, and results in a cumulative total of more than 5000 SF~~ 8,000 square feet of both new and redeveloped impervious cover.

SITUATION	REQUIREMENT
Impervious cover is added to a site where no impervious cover exists	Provide controls for 100% of the area of development containing <b>new impervious cover</b>
Impervious cover is added to a site with <b>base impervious cover</b>	Provide controls for 100% of the area of development containing the <b>new impervious cover</b> , or an approved equivalent area
Impervious cover is added to a site with <b>new impervious cover</b>	Provide controls for 100% of the area of development containing <b>new impervious cover</b>
<b>Redeveloped impervious cover</b>	Provide controls for 100% of the area of development containing the <b>redeveloped</b> impervious cover, or an approved equivalent area

### 1.9.3 Requirements For Water Quality Controls In Stream Buffers~~Water Quality Zones~~

#### A. Water Quality Transition Zone (WQTZ)

According to Section 25-8-211 of the Land Development Code, water quality controls are required for all new or redeveloped impervious cover in the WQTZ. Additionally, sections 25-8-211 and ~~25-8-243~~ of the Land Development Code require water quality controls in the Barton Springs Zone for all development, regardless of level of impervious cover. Refer to sections 1.6.8 and 1.6.9 of the ECM for design information. Refer to section 1.5.4 of this manual for additional information on development in the Water Quality Transition Zone.

#### B. Critical Water Quality Zone (CWQZ)

~~Unless otherwise required by Chapter 4-3 of the Code of the City of Austin, d~~ Development allowed under 25-8-261 and 25-8-262 of the Land Development Code does not require water quality controls except for golf courses and playfields as specified in 25-8-211 of the Land Development Code. Refer to section 1.5.3 of this manual for additional information on development in the Critical Water Quality Zone.

However, Sections 25-8-211 and ~~25-8-243~~ of the Land Development Code requires water quality controls in the Barton Springs Zone for all development, regardless of the level of impervious cover. Refer to sections 1.6.8 and 1.6.9 of the ECM for design information.

#### **1.9.4 Special Situations**

##### **A. Condemnation Provisions.**

When impervious cover is replaced as a result of ROW condemnation (25-5-2, ~~13-2-502(f)~~ (deleted), or 25-8-24 LDC) replacement water quality controls are only required to the level of previous controls prior to condemnation. Additional impervious cover beyond that which was removed by ROW condemnation shall follow water quality control guidelines of this section for the applicable watershed.

##### **B. Maintenance of Impervious Cover.**

For the purposes of distinguishing between redevelopment and maintenance activities, existing impervious cover currently being used as parking lots, driveways, roadways and sidewalks may be resurfaced and repaired without requiring water quality controls under the following conditions:

1. A pre-construction meeting is held with the environmental inspector from the ~~Watershed Protection Planning~~ and Development Review Department, and it is determined that the conditions of 2 and 3 below are met:
2. There will be no change in layout or existing drainage patterns and the excavation proposed is only that necessary for repair of the base material (maximum depth of 18 inches is to be excavated, unless additional depth is approved by the Director of the ~~Watershed Protection and Development Review Department~~); and
3. Erosion controls and tree protections fencing are installed to City standards, and all construction materials are stockpiled in areas where erosion /sedimentation potential and ground disturbance is minimized.

## **~~SECTION 6 -- ENDANGERED SPECIES~~**

### **~~6.1.0 GENERAL~~**

~~The information in this section is intended to define the technical criteria needed to achieve the Endangered Species protection goals identified in Chapter 25-8, Subchapter B, Article 2 of the Land Development Code. These rules apply to all land located within the City limits and to the City's extraterritorial jurisdiction areas.~~

~~A list of special submittal requirements necessary to show compliance with the provisions of the Land Development Code and these rules is found in the Administrative Criteria Manual of this technical manual series, as well as in section 6.2.2 of this manual. The site plan approval process is outlined in Chapter 25-5 of the Land Development Code. Inspection and enforcement information is also outlined in Chapter 25-1.~~

### **~~6.2.0 ENDANGERED SPECIES SURVEYS~~**

#### **~~6.2.1 Initial Consultation/Project Assessment~~**

~~All projects subject to Chapter 25-8, Subchapter B, Article 2 must verify the need, or lack thereof, for an endangered species survey. This would be done through informal consultation with the Watershed Protection and Development Review Department (WPDR) before submittal. The need for a detailed survey shall be determined by consulting maps maintained by the WPDR which show the general regions containing endangered species habitat and/or suitable karst regions.~~

~~—1. If a formal project assessment is requested by the applicant as per Sec. 25-1-62, the consultation with WPDR would be combined with that process.~~

~~—2. An applicant need not conduct new endangered species surveys of a tract if:~~

~~—• The tract has been surveyed (by the applicant or other party such as the biological team for the Austin Regional Habitat Conservation Plan) within the five years prior to the development application, and~~

~~—• At a minimum the previous effort(s) met the general requirements described below for each type of endangered species, and~~

~~—• Conditions on the tract have not changed to the extent that the previous information is rendered outdated.~~

~~—• For projects which are determined to not harbor suitable substrates or habitat for endangered species, a note to that effect shall be included on the plan.~~

~~—• For projects for which it is determined during the consultation process or project assessment that endangered species may exist on the tract, the following requirements for further surveys and submittals shall be met.~~

#### **~~6.2.2 Special Submittal and Survey Requirements~~**

~~—• Preliminary plan or site plan shall include a map of:~~

~~—1. Suitable habitat for any endangered birds,~~

- ~~— 2. Occupied territories of endangered birds (but see Sec. III.A.4),~~
- ~~— 3. Karst features which may harbor endangered cave invertebrates,~~
- ~~— 4. Locations of any endangered plant populations.~~
- ~~— • Survey requirements for each type of endangered species are specified below. Minimum field time requirements for each group of species (birds, plants, karst features) are exclusive for that group.~~
- ~~— • An Endangered Species Report shall accompany the plan and shall include:~~
  - ~~— 1. Dates of endangered species field surveys, if any, and estimated level of effort.~~
  - ~~— 2. Names and qualifications of personnel performing field surveys for endangered species.~~
  - ~~— 3. A brief written description of results including the estimated likelihood of occurrence of endangered species on the tract, especially for birds, if performed outside of the nesting season (see below).~~

### **~~6.2.3 Bird Surveys~~**

#### **~~A. General Requirements.~~**

- ~~— 1. Mapping of suitable habitat and surveys for occupied territories of birds shall be accomplished by a qualified biologist familiar with the ecology of the species. Mapping of suitable habitat may be accomplished at any season.~~
- ~~— 2. Be advised that surveys for endangered species may require a valid federal and/or state research permit and must comply with all conditions attached thereto.~~
- ~~— 3. Ground surveys to map occupied habitat shall meet the following criteria:~~
  - ~~— • Accomplished on days with weather conditions suitable for detection of the species.~~
  - ~~— • Limited to the following seasons:~~
    - ~~— • Black-capped Vireo — April 15 to July 15.~~
    - ~~— • Golden-cheeked Warbler — April 1 to June 15.~~
    - ~~— • Minimum 3 visits on separate days.~~
    - ~~— • Minimum 8 hours per 100 acres of suitable habitat.~~
  - ~~— • Mapping shall follow standard methods established by the International Bird Census Committee (Audubon Field Notes, Vol. 24, pp. 722-726, 1970)~~
- ~~— 4. Outside of the seasons described in 3.b. above, in lieu of territorial mapping of occupied habitat, all suitable habitat may be considered occupied. If so delineated, this assumption shall be clearly marked on the plan. ((NOTE: surveys of occupied habitat are required unless project scheduling constraints preclude such surveys. In the latter event, an explanation of circumstances precluding the surveys for occupied habitat shall be submitted with the plan.))~~

~~—5. All known previous surveys or information regarding the presence of vireos or warblers on the subject tract shall be included in the submittal.~~

~~B. Black-capped Vireo.~~

~~—Mapping of suitable habitat for the vireo shall include ground surveys. Maps of suitable habitat from aerial photography or other remote sensing alone are not sufficient.~~

~~C. Golden-cheeked Warbler.~~

~~—Suitable habitat for the Golden-cheeked Warbler may be mapped from recent aerial photography, ground surveys, and/or other available sources.~~

#### **6.2.4 Cave Invertebrates**

~~—• Any plan submittal which is wholly or partially within the recharge zones for the Northern Edwards Aquifer or the Barton Springs segment of the Edwards Aquifer as mapped by the City of Austin shall include a survey and map of karst features. If an environmental assessment is required as per Sec. 25-8-121, the surveys accomplished for the present section shall be included with the hydrogeological element therein.~~

~~—• A ground survey for karst features capable of supporting one or more of the federally-listed endangered cave species shall be made by a qualified geologist, hydrogeologist, or cave biologist. A minimum effort of 8 hours of ground searches per 100 acres of suitable Edwards limestone terrain specifically focused on finding karst features is required.~~

~~—• A description relating any karst features on the tract to the known distribution of endangered cave invertebrates, including an estimate of the likelihood of their occurrence on the tract, shall be included with the submittal.~~

~~—• Biological surveys of suitable karst features and/or specific surveys for the presence of endangered cave species are NOT required but shall be submitted if available. Any such surveys shall be accomplished ONLY by a qualified cave biologist under valid federal and state research permits.~~

#### **6.2.5 Plant Species**

~~—• The plant species currently covered by the Austin Regional Habitat Conservation Plan include:~~

~~—Bracted twistflower~~

~~—Canyon mock-orange~~

~~—Texas amorphia~~

~~—Streptanthus bracteatus~~

~~—Philadelphus ernestii~~

~~—Amorpha roemeriana~~

~~—Annual forb~~

~~—Perennial shrub~~

~~— Perennial shrub~~

~~—• A survey of appropriate habitat shall be made by a qualified biologist familiar with the identification and ecology of these plants. Ground surveys shall include a minimum of 8 hours per 100 acres of suitable substrates or habitat for any of the plants.~~

~~—• Plant surveys for the perennial shrubs may be accomplished at any season.~~

~~—• Surveys for the bracted twistflower must be accomplished during its limited flowering period from April 1 through May 31. It is preferred that the results of such surveys be submitted as early in the development review process as possible. In all cases, survey information concerning bracted twistflower should be submitted no later than final plat approval for residential tracts or construction plan approval for non-residential tracts.~~